

Atlas vertebra realignment and achievement of arterial pressure goal in hypertensive patients: a pilot study

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FROM ABSTRACT

Anatomical abnormalities of the cervical spine at the level of the Atlas vertebra are associated with relative ischaemia of the brainstem circulation and increased blood pressure (BP).

Manual correction of this mal-alignment has been associated with reduced arterial pressure.

This pilot study tests the hypothesis that correcting mal-alignment of the Atlas vertebra reduces and maintains a lower BP.

Using a double blind, placebo-controlled design at a single center, 50 drug naïve (n=26) or washed out (n=24) patients with Stage 1 hypertension were randomized to receive a National Upper Cervical Chiropractic (NUCCA) procedure or a sham procedure. Patients received no antihypertensive meds during the 8-week study duration.

The primary end point was changed in systolic and diastolic BP comparing baseline and week 8.

The study cohort had a mean age 52.7 years and consisted of 70% males. At week 8, there were differences in systolic BP (-17 mm Hg for NUCCA versus -3 mm Hg for placebo) and diastolic BP (-10 mm Hg for NUCCA versus -2 mm Hg for placebo).

Lateral displacement of Atlas vertebra was 1.0° at baseline versus 0.04° at week 8 for NUCCA versus 0.6° at baseline versus 0.5° at week 8 for placebo.

No adverse effects were recorded.

We conclude that restoration of Atlas alignment is associated with marked and sustained reductions in BP similar to the use of two-drug combination therapy.

THESE AUTHORS ALSO NOTE:

The achievement of blood pressure (BP) goals in more than 70% of hypertensive individuals requires two or more antihypertensive agents.

"Since the early 1940s, a small cadre of chiropractic specialists have foregone typical 'full-spine manipulations', limiting their practice to precise, delicate manual alignment of a single vertebra, C-1 or Atlas; these practitioners make up the National Upper-Cervical Chiropractic Association (NUCCA). Unlike other vertebrae, which interlock one to the next, the Atlas relies solely upon soft tissue (muscles and ligaments) to maintain alignment; therefore, the Atlas is uniquely vulnerable to displacement. Displacement of C-1 is pain free and thus, remains undiagnosed and untreated, whereas health-related consequences are attributed to other etiologies."

"Minor misalignment of the Atlas vertebra can potentially injure, impair, compress and/or compromise brainstem neural pathways."

"Changes in the anatomical position of the Atlas vertebra and resultant changes in the circulation of the vertebral artery lend itself to worsening of hypertension."

"Alterations in Atlas anatomy can generate changes in the vertebral circulation that may be associated with elevated levels of BP."

The duration of the study was 8 weeks, with scheduled doctor visits every week.

THIS PAPER DESCRIBES THE ANALYSIS AND TREATMENT OF THE STUDY SUBJECTS, including:

- 1) The analysis and treatment was performed by a chiropractic NUCCA practitioner.
- 2) A supine leg-length check because a "misaligned Atlas results in leg-length disparities," and "when the patient is instructed to turn his/her head to the left or right, the heel-position disparity changes."
- 3) "Heels that appear parallel to one another, or that remain static on head-turning, signal that the Atlas is not misaligned."
- 4) Cervical skin temperature determination.
- 5) Postural analysis using the NUCCA Anatometer which provides pertinent diagnostic details of postural asymmetries, including left and right weight-bearing scales, measures of pelvic distortions, measures of C-7 or T-1 displacement, measures of 'head-tilt', and measures of weight-bearing inequalities.

6) Pre-Alignment Craniocervical Radiographs: Three X-ray views to measure in three dimensions the Atlas misalignments in precise degree of orientation. The views exposed include:

- A)) Lateral C-Spine
- B)) Nasium AP skull view
- C)) Vertex through the crown of the skull and into the neural canal

7) On the radiographs, the "clinician locates physiological landmarks to mark pencil lines at 'vertical axis' (perfect Atlas alignment) and the center of the skull on the Nasium view, then uses a protractor to measure physiologic angles that deviate from them, view by view, in order to visualize, in three dimensions, the Atlas misalignment's degree and orientation."

8) This radiographic analysis was carried out at baseline and repeated after being adjusted during the first visit, and repeated again at 8 weeks. [This means that the 3 radiographic views were repeated 3 times for a total of 9 cervical radiographs during the 8-week trial.]

9) A precision side-posture chiropractic adjustment is described with delivery through the chiropractor's pisiform to the Atlas transverse process. Part of the description includes: "A series of precise, subtle, external nudges causes Atlas to recoil into normalized alignment, reseating occipital condyles into Atlas' lateral masses."

10) The sham intervention was indistinguishable to the patient from an authentic alignment. The only difference being "the clinician intentionally and slightly misplaced the patient's head on the ('fulcrum') support device and misplaced his hands, intentionally to miss the Atlas' lateral-mass contact point for the crucial 'lever nudge'."

85% of the treatment group required only one adjustment as the Atlas remained in alignment during subsequent visits over the 2 month course of the trial.

"The hypothesis behind the Atlas adjustment suggests that misalignment involves either a displacement from an optimally centered location or a rotation away from an optimally angular orientation (as determined by X-ray)."

DISCUSSION

"The findings of this pilot study represent the first demonstration of a sustained BP lowering effect associated with a procedure to correct the alignment of the Atlas vertebra. The improvement in BP following the correction of Atlas misalignment is similar to that seen by giving two different antihypertensive agents simultaneously."

“This reduction in BP persisted at 8 weeks and was not associated with pain or pain relief or any other symptom that could be associated with a rise in BP.”

Data linking changes in Atlas anatomy and posterior fossa circulatory changes associated with hypertension date back more than 40 years.

“What is clear is that misalignment of the Atlas vertebra can be determined by assessment of the alignment of the pelvic crests. This should be considered in those who have a history of hypertension and require multiple medications for treatment. Additionally, it should be considered in those with refractory hypertension and a history of neck injuries, independent of the presence of pain. Note that pain was not present in any of the patients randomized in this study.”

[Very Important]

KEY POINTS FROM DAN MURPHY

- 1) Anatomical abnormalities of the cervical spine at the level of the Atlas vertebra are associated with relative ischaemia of the brainstem circulation and increased blood pressure.
- 2) The precise chiropractic spinal adjustments delivered in this study were able to produce important reductions in both systolic (17 mm HG) and diastolic (10 mm Hg) blood pressure that was sustainable over a 8 week period with “no adverse effects.”
- 3) Restoration of Atlas alignment is associated with marked and sustained reductions in BP similar to the use of two-drug combination therapy.
- 4) “Minor misalignment of the Atlas vertebra can potentially injure, impair, compress and/or compromise brainstem neural pathways.”
- 5) “Changes in the anatomical position of the Atlas vertebra and resultant changes in the circulation of the vertebral artery lend itself to worsening of hypertension.”
- 6) “The findings of this pilot study represent the first demonstration of a sustained BP lowering effect associated with a procedure to correct the alignment of the Atlas vertebra. The improvement in BP following the correction of Atlas misalignment is similar to that seen by giving two different antihypertensive agents simultaneously.”
- 7) “Misalignment of the Atlas vertebra can be determined by assessment of the alignment of the pelvic crests. This should be considered in those who have a history of hypertension and require multiple medications for treatment. Additionally, it should be considered in those with refractory hypertension and a history of neck injuries, independent of the presence of pain. Note that pain was not present in any of the patients randomized in this study.” **[Very Important]**

THIS STUDY SUPPORTS THE FOLLOWING:

- 1) Very small displacements of the atlas can adversely affect blood pressure.
- 2) Very small displacements of the atlas affect supine leg length.
- 3) Very small displacements of the atlas can affect upright spinal and pelvic posture and the symmetry of left-right weight bearing.
- 4) The evaluation of small displacements of the atlas requires 3 carefully exposed and protractor measured radiographs of the cervical spine.
- 5) NUCCA chiropractic adjustments can improve clinically important very small displacements of the atlas.
- 6) The evaluation of biomechanical changes in atlas displacement following chiropractic adjustment requires post-treatment radiographic exposure and measurements.
- 7) Chiropractic should not be limited only to those with aches and pains. The patients in this study did not have aches and pains, but they suffered from hypertension. This study further supports that chiropractic benefits systemic health and wellbeing.
- 8) This study supports the benefit of chiropractors exposing x-rays on patients for biomechanical reasons.